



NDRIO-CPAS POST IMPLEMENTATION REPORT

PROJECT IDENTIFICATION

Project Name: Teachers' Fund for Retirement (TFFR) Pension System Upgrade

Date: 05/08/06

Project Sponsor: Fay Kopp, Deputy Executive Director, North Dakota Retirement & Investment Office (NDRIO)

Project Managers: Bryan Stephenson, Kathleen Sortino, and Jim Gienger

Report Prepared By: Bryan Stephenson and Jim Gienger

INTRODUCTION

This report is submitted in accordance with the *CPAS v5 Implementation Project Close Out and Transition to Maintenance and Support Services* document approved by NDRIO and the project management methodology requirements for project close out issued by the North Dakota Enterprise Project Management Office (EPMO). The EPMO processes were defined over the same time period as this project. Although the timing of new guidelines made it difficult to meet all requirements, it has been the intent of NDRIO to follow all guidelines as much as possible. The objective is to ensure that the project met approved guidelines and that lessons learned are documented to contribute to the continuous improvement of project implementation at NDRIO and in the State of North Dakota.

In order to achieve qualitative input to the report, key members of the NDRIO staff involved with the TFFR Pension System Upgrade Project completed a survey designed in accordance with the close out documentation. A copy of the survey template that was developed is attached as Appendix 1. A summarized version of the survey results and conclusions is attached as Appendix 2. Additionally, CPAS facilitated project assessment meetings with NDRIO and ITD. Finally, the project managers provided comments to synthesize the survey comments and add their personal experience on the project. This report incorporates the points raised in the survey and project feedback received during the project assessment meetings.

EXECUTIVE SUMMARY

NDRIO has concluded that the implementation of CPAS v5 was very successful based on the high level of production readiness achieved within the original budget and the final revised schedule established for the project. The adherence to established project management standards, coupled with a high level of team commitment to the project contributed to a successful implementation of CPAS v5 and the migration to FileNet P8.

The project was completed nearly \$68,000 under the original \$2,000,000 budget. Implementation was extended by about 4 months over the original 19 month schedule to accommodate changes not anticipated at the project initiation. The scope of the project remained within the original boundaries set in the Master Agreement. The system has been in production since September 28, 2005 with no interruption to operations and has successfully transitioned to a maintenance and support status.

In this report, NDRIO has tried to present an honest assessment of the factors that led to a successful project, while at the same time recognizing that there were some issues and challenges along the way. To the credit of everyone involved, all issues were dealt with in a professional and collegial manner and never caused the project to falter.

As a general comment, it is worth repeating the introductory comments of the Project Sponsor, Fay Kopp, at the final Steering Committee on February 8, 2006.

"As the Project Sponsor, I am very pleased to report that the CPAS v5 pension administration system implementation project is now complete. I am very proud of the dedicated efforts of project team members at CPAS, NDRIO, and NDITD who committed their time and talents to ensure the success of this project. I

am pleased that the project came in well under budget thanks to the cooperative efforts of all individuals involved. The approach adopted at the start of the project resulted in carefully considered changes to the project schedule. While the overall CPAS project came in behind the original schedule, within this same time frame, NDRIO also migrated its image system to FileNet P8, and so actually accomplished more during these past two years than originally anticipated.”

PROJECT OVERVIEW

The project commenced with a comprehensive Project Charter that outlined the background, scope, communications plan and general strategy for project implementation. It also provided the roles and responsibilities for the project team. This was an important step as the project assessment process confirmed that a key critical success factor was the cooperation between the three organizations involved in the implementation: NDRIO, CPAS and ITD. MSI/ESI provided project management services for NDRIO during the project period.

The Charter was followed by the production of detailed specifications for all aspects of the solution. CPAS provided iterative build releases to NDRIO to ensure that configuration was accurate, the NDRIO core project team could become familiar with the operation of the CPAS software, and testing could commence early in the project.

Data conversion was a joint undertaking that involved ITD programming resources to extract the data from the mainframe, the NDRIO technical staff to check the data extracts and provide the data files to CPAS, and CPAS to provide the data interface formats, validate the data and load the data into the Oracle tables. Early data analysis, data conversion specification and conversion dry runs to test the extract programs and the validation and loading of the data into the Oracle RDBMS contributed to the success of the final data conversion.

Shortly after project startup, NDRIO was notified by ITD that support for their image system, Visual Info, was being dropped. NDRIO needed to move all their images and workflow processes to FileNet P8. This effort became a 6 month project within the CPAS implementation project requiring most of the same resources within NDRIO.

Reports were originally tasked to NDRIO; however, due to the project implementation requirements including data conversion and the FileNet implementation, most reports were re-tasked to CPAS through Change Requests (CR).

High Level Project Chronology

- August 25, 2003 – RFP Issued by NDRIO
- September 19, 2003 – Bids received
- January 13, 2004 – Clarifications and BAFO completed
- March 31, 2004 – Master Agreement between the State of North Dakota and CPAS Systems Inc. signed
- September 28, 2005 – CPAS v5 in production and Phase 1 activities completed
- January 20, 2006 – Phase 2 activities completed
- February 2, 2006 – Project signoff, final payment, and transition to maintenance and support services

PROJECT ASSESSMENT ANALYSIS

In addition to assessment meetings with individuals and groups, a facilitated session was conducted with the NDRIO team members to summarize the top project Enablers (what worked well during the implementation project), summarize the top Issues (things that caused problems during the project but were resolved), Root Causes for each Issue and Alternatives for future projects. The results of the project assessment session are:

Enablers (What worked well)

1. The right project team. The outstanding teamwork (NDRIO, CPAS, ITD, MSI, and ESI) from the outset of the project was based on a strong commitment to success, compromise to ensure progress, and a strong work ethic from every team member.

2. Selection of the right software. A great deal of care was taken to select pension administration software that equaled or exceeded the functionality of the legacy system, provided a high level of flexibility for configuration, was built on a superior RDBMS (Oracle), and was developed by a company that NDRIO had a high comfort level with in terms of their history of developing pension software and their professional staff. NDRIO felt that the selection of the CPAS v5 software fit all their criteria.
3. Incremental configuration releases. Incremental releases of the software enabled early testing and when integrated with data conversion dry runs before the production conversion gave NDRIO the confidence to go into production with CPAS v5 and avoid the labor intensive task of running two systems in parallel. The sequence of plan set up worked well (early 90% rules set up). NDRIO trusted CPAS experience and guidance in the sequence of releases. This also facilitated User Acceptance Testing (UAT) and the shift to live production.
4. Management of the project. There was an excellent governance model in place that provided effective communications, brought ITD into the project early, and kept all stakeholders informed throughout the project. Excellent project management kept the project on track and contributed to effective change management due in part to the weekly project reviews and recognition of factors that needed to be watched closely as the project progressed.
5. ITD Involvement. ITD was involved at the outset of the project and took a sincere interest in the success of the project. In particular the performance testing using Compuware gave ITD the opportunity to test the system while still in the configuration stage. The quick turnaround by CPAS to act on the findings proved to be an important project enabler. ITD direct involvement with data extract and installation of the application on a separate instance was much appreciated by the project team. The upgrade to a fiber optic connection to ITD proved to be a breakthrough point in system performance. The work with ITD on the web services is progressing well and a load test will be conducted.
6. Timing of the Implementation. NDRIO felt that the timing of the project worked well. NDRIO was a lead organization in the mainframe migration thus generating support for the project. NDRIO capitalized on long serving staff with no turnover during the project and the TFFR Board was very supportive throughout.

Issues Encountered During the Project

1. Data Conversion. As the project evolved it was clear that there were two tracks – Functional and Data Conversion. Early detailed discussion and strong CPAS leadership on data conversion to identify the key dependencies of data and the elements of data mapping would have increased the effectiveness of data conversion and potentially a better integration of the two project tracks. This would also enable the organization to make early decisions on data integrity and how much data would be required to migrate to the target environment. The extract of the data from the mainframe took longer than anticipated, but ITD resources responded quickly to overcome the lag and accomplish the conversion objectives. Data cleansing could have started sooner; however, it was the early conversion dry runs that recognized data issues and led to a cleansing effort.
 - a. Root Cause. Need for more front-end data analysis, discussion, and training.
 - b. Alternatives.
 - i. Recommend more front-end analysis involving ITD, Vendor, and State Agency.
 - ii. Better understanding of the time and effort involved in a successful data conversion project.
 - c. Project Outcome. Data Conversion was successful, data cleansing was accomplished, and data reconciliation was completed prior to the go live date. However, the additional effort required by the small NDRIO IT staff, a small delay at ITD to resolve a resource issue, and the need for early CPAS leadership in the process caused some schedule slippage.
2. Specifications. The specification process, although there were no major gaps, could have contained more detail; however, this had to be balanced with the schedule to commence configuration. NDRIO felt that the addition of flow charts to illustrate core functionality or complex configured functions would be beneficial. There could have been a better description of what was the standard functionality of the CPAS v5 application.

- a. Root Cause. Determining the right balance of in-depth detail and a specification detailed enough to progress the implementation.
 - b. Alternatives.
 - i. Determine at project initiation the expectations for the level of detail in the specification.
 - ii. Conduct early walkthroughs of the specification onsite with the client to ensure that any interpretations are accurate.
 - iii. Ensure that the implementation allows some flexibility for change as the client becomes more familiar with the system and provides more detail on administrative processes
 - iv. Encourage the client to document their current processes in order to perform a gap analysis or document potential process changes.
 - c. Project Outcome. To permit configuration to commence before all functional specifications were completed, NDRIO agreed to sign off the main specification document and then signoff on eight specification attachments for functions that would be required later in the project, for example: Seminar Tracking, Reports, Security, Web Services, and Imaging Interface. This allowed configuration, releases, and testing to occur early in the project. NDRIO noted that the flexibility of the CPAS application for ease of configuration and the cooperation of CPAS in adopting changes in the pension functionality due to interpretations and additional details were excellent.
3. Incorporation of the CPAS Commercial Off-the-Shelf (COTS) solution in a shared server environment. After the first installation in the shared environment it became clear that the design of CPAS v5, particularly from a security perspective, would be difficult to manage in the existing ITD environment. This resulted in various discussions at the technical level to find a solution. It was felt that clear definition of the target environment and onsite CPAS/ITD technical meetings/discussions at project initiation or even at the RFP stage could have resulted in an earlier decision on how to handle a package software solution in a shared server environment.
 - a. Root Cause. Inadequate understanding of the target environment by the Vendor due to lack of detailed technical documentation.
 - b. Alternatives.
 - i. Include more technical information in the RFP.
 - ii. Have the Vendor technical architect onsite before the first installation occurs to ensure a complete understanding of the environment and the potential problems that may occur.
 - c. Project Outcome. A positive outcome was the ITD decision to place the CPAS application and Oracle database on a separate instance in the ITD environment. Since then the system has worked very well and there are three schemas – Production, Test and Development. The movement of updates from test to production has been working very well.
4. FileNet Implementation. The conversion of TFFR images to the FileNet P8 upgrade imposed an extra burden on the NDRIO staff during the concurrent CPAS v5 implementation. There was a scope and time impact due to the upgrade to P8. This had the ancillary effect of requiring the transfer of report development to CPAS.
 - a. Root Cause. Support for Visual Info was being dropped forcing NDRIO to migrate to FileNet P8 during the CPAS implementation project.
 - b. Alternatives.
 - i. Agencies plan for and manage the impact of the extra workload by permitting slippage, hiring additional staff or delaying a project with lower priority.
 - ii. Monitor scope change and make adjustments for the time and possible cost implications.
 - c. Project Outcome. To compensate for the additional workload on the NDRIO staff, the majority of report development was shifted from NDRIO to CPAS through change requests. CPAS added additional resources to complete the report development. The imaging project was completed later than originally anticipated; however, by the project live date, the first interface between CPAS v5 and FileNet had been completed.

5. Training and Documentation. The CPAS Trainer was not integrated into the project team; therefore she was always behind when the system went into successive releases just before training was scheduled. The result was that the trainer did not have enough preparation time and missed some of the latest configuration. Consequently some training was not to the depth required for the end users. In addition, the first round of training documentation did not meet NDRIO requirements.
- a. Root Cause. Trainer not integrated into the project team.
 - b. Alternatives.
 - i. Ensure that the vendor trainer is integrated into the project team and maintains currency with configuration.
 - ii. Make more use of the client trainer if such a resource is available; in other words, make training a combined effort of the client and project team.
 - iii. Have additional "walkthroughs" led by the project team at each major release.
 - c. Project Outcome. Template training was considered to be well done. Training was accomplished by sending project team members with the trainer to assist. Also the NDRIO Pension Supervisor, who was testing the system on a daily basis, supplemented the training delivered by CPAS. Full training documentation was delivered later in the project.

Summary of Recommendations for Future Projects

- Conduct more detailed planning and analysis for the data conversion effort at project initiation to determine if data cleansing is required. If possible, conduct data cleansing prior to project start-up.
- Plan for more detail in the specifications to include flow charts and more detail on the application functionality. (Note this may increase cost and extend schedule).
- Provide detailed documentation of the IT environment and conduct technical confirmation of installation requirements at project start-up.
- If possible avoid concurrent IT projects where there will be a significant workload causing project slippage.
- Examine alternatives for training where a project is delivering incremental releases so that there is no lag between the functional deliveries and the end user training. Carefully schedule training and consider functional walkthroughs as an alternative during implementation.
- Incorporate more onsite working sessions in the project plan (Note that this will increase travel costs.).
- The agency project manager should spend more time on site to fulfill the PM tasks.
- Conduct performance testing at any stage where it appears that there might be a problem. Deal with performance issues early and monitor frequently.
- Base the requirement for a Performance Bond on a risk assessment. If a Performance Bond is deemed necessary, provide a North Dakota approved format to Vendor.

KEY PROJECT METRICS

COST - PROJECT FINANCIAL SUMMARY

| TFFR PENSION SOFTWARE REPLACEMENT PROJECT COSTS | | | | |
|---|-------------------------|----------------------------|---------------------|--------------------------|
| | Original Project Budget | Revised Cost to Completion | Actual Paid To Date | Project Budget Remaining |
| CPAS | | | | |
| SYSTEM IMPLEMENTATION | 875,000.00 | *913,500.00 | 913,500.00 | 0.00 |
| LICENSE | 300,000.00 | 300,000.00 | 300,000.00 | 0.00 |
| MAINTENANCE/SUPPORT for 1st Yr | 110,000.00 | 110,000.00 | 110,000.00 | 0.00 |
| TRAINING | 60,000.00 | *53,400.00 | 53,400.00 | 0.00 |
| MSI/ESI | | | | |
| PROJECT MANAGEMENT | 190,000.00 | *200,000.00 | 212,000.00 | **(12,000.00) |
| IMAGE CONVERSION | 112,000.00 | 112,000.00 | 112,000.00 | 0.00 |
| PROJECT TRAVEL & MISC | 60,875.00 | 60,875.00 | 56,961.50 | 3,913.50 |
| ITD & MISC COSTS | 292,125.00 | *250,225.00 | 174,500.23 | 75,724.77 |
| TOTAL PROJECT | 2,000,000.00 | 2,000,000.00 | 1,932,361.73 | 67,638.27 |

*Note: CR011 – additional \$10,000 for CPAS reports development.

CR012 – additional \$15,000 for CPAS reports development & CPAS project management.

CR013 – additional \$13,500 for CPAS reports development.

CR014 – less \$6,600 for unused CPAS training.

CO001 – additional \$10,000 for MSI project management.

**Note: Project management contract (utilizing ITD vendor pool) with Jim Gienger, ESI, for Phase 2 of project and post implementation activities.

SCHEDULE

| | |
|---|----------|
| Number of payment points (deliverables) in original schedule. | 13 |
| Number of payment points (deliverables) in the final actual schedule | 18 |
| Difference in original planned production date and Final production date <ul style="list-style-type: none"> Original production date was July 1, 2005 Actual production date was September 28, 2005 | 3 Months |
| Difference in elapsed time of original schedule and final actual schedule (completion of all project deliverables). <ul style="list-style-type: none"> Original schedule was from March 2004 to September 2005 Final schedule was from March 2004 to January 2006 | 4 Months |

SCOPE

| | |
|---|--|
| There were no changes to project scope. | |
|---|--|

QUALITY

| | |
|---|--|
| The quality management tool utilized during the project was the CPAS CQ system. This system tracks all change requests, deliverables, enhancements, errors, and project tasks. During the course of the project, over 500 items were tracked in CQ providing the project team with the ability to manage quality throughout the entire project. | |
|---|--|

APPENDIX 1 - TFFR PENSION SYSTEM UPGRADE PROJECT FEEDBACK SURVEY

Project Name: TFFR Pension System Upgrade

Name: _____

Date: _____

Instructions for completion:

1. Please review all the questions before you commence the survey to familiarize yourself with the extent and scope of the survey. Please complete the survey in electronic format using the form below. Use as much space as you require to include your comments. The last question is an optional open question for your final views or conclusions
2. For each question, please use a rating scale of 1 to 3 as follows:
 - 1=Not at All, or Poor,
 - 2=Adequate, or Satisfactory,
 - 3=To a Great Extent, or Excellent.
 - N/A=Not Applicable. If the question does not apply to your role on the project or you feel that you are not in a position to provide a rating, you may insert N/A in the rating column.
3. In the Comments column please relate your personal experience on the project and how your comments may identify lessons learned and best practices to use in future projects. Your honest feedback is one of the primary mechanisms for assessing strengths and weaknesses to present a balanced assessment of the project's performance.
4. Please complete the Survey by **3 March 2006** and submit to Jim Gienger (jgienger@esi-nd.com) and Bryan Stephenson (bryans@cpas.com) by email. The individual results will be confidential and shared only on a need to know basis to collate comments and draft a Project Assessment Report.

Now start the Survey

| Categories and Questions | Rating (1-3) | Comments (What worked well? What could have been done better? What recommendations do you have for future projects?) |
|---|-----------------|--|
| PRODUCT EFFECTIVENESS | | |
| How well does the CPAS v5 product meet the stated needs of NDRIIO? | | |
| To what extent were the objectives and goals outlined in the RFP met? | | |
| What is your overall assessment of the outcome of this project? | | |
| COST, SCOPE, SCHEDULE, QUALITY MANAGEMENT (CSSQ) | | |
| How well did the scope of the project match what was proposed by CPAS and documented in the Project Charter? | | |
| How satisfied are you with your involvement in the development and/or review of the Project Charter during Project Initiation and Planning? | | |
| Were changes to Cost, Scope, Schedule, or Quality, effectively managed? | | |
| COMMUNICATIONS MANAGEMENT | | |
| How satisfied were you with the kick-off meetings you participated in? | | |
| How effectively were the project team meetings conducted? | | |
| How effectively were stakeholders involved in the project? (ITD, Actuary, TFFP Board, etc) | | |
| Was communication with stakeholders adequate? | | |
| How well were your expectations met regarding the frequency and | | |

| Categories and Questions | Rating (1-3) | Comments (What worked well? What could have been done better? What recommendations do you have for future projects?) |
|--|-----------------|--|
| content of information conveyed to you by the Project Managers? | | |
| How well was project status communicated throughout your involvement in the project? | | |
| How well did the Project Managers respond to your questions or comments related to the project? | | |
| How useful was the format and content of the Project Status Report to you? | | |
| ACCEPTANCE MANAGEMENT | | |
| How effective was the acceptance management process? | | |
| How well prepared were you to accept project deliverables? | | |
| How well defined was the acceptance criteria for project deliverables? | | |
| Was sufficient time allocated to review project deliverables? | | |
| How closely did deliverables match what was defined within Project Scope? | | |
| ISSUES MANAGEMENT | | |
| How effectively were issues managed on the project? | | |
| How effective was the CPAS CQ tool for managing errors and issues? | | |
| How effectively were issues resolved before escalation was necessary? | | |
| If issue escalation was required, how effectively were issues resolved? | | |
| How effectively were issues able to be resolved without impacting the Project Schedule or Budget? | | |
| TRAINING & TESTING | | |
| How effective was the documentation that you received with CPAS V5? | | |
| How effective was the training you received in preparation for the use of CPAS V5? | | |
| How useful was the content of the training you received in preparation for the use of CPAS V5? | | |
| How timely was the training you received in preparation for the use of CPAS V5? | | |
| How comprehensive was the User Acceptance Testing (UAT)? | | |
| How effective was problem resolution during UAT? | | |
| How effective was testing performed at CPAS prior to delivery of enhancements/changes? | | |
| PROJECT IMPLEMENTATION & TRANSITION TO SUPPORT | | |
| How effective was the process of gathering requirements and development of the Specifications documents? | | |
| How effective was the CPAS V5 configuration and rule setup process? | | |
| How effective was the Data Conversion process? | | |
| How effective was the support you received during implementation of CPAS V5? | | |
| How smooth was the transition of support from the Project Team to the Professional Services Group (PSG)? | | |
| Was there a qualitative difference in the level of support provided by the Project Team during implementation and by the PSG after transition? | | |

| Categories and Questions | Rating (1-3) | Comments (What worked well? What could have been done better? What recommendations do you have for future projects?) |
|---|-----------------|--|
| Did the Project Team adequately plan for and prepare the PSG for its ongoing responsibilities for the product or service of the project? | | |
| PERFORMANCE OF THE PROJECT TEAM | | |
| Overall, how effective was the performance of the CPAS Project Manager (Bryan Stephenson)? | | |
| Overall, how effective was the performance of the MSI Project Manager (Kathleen Sortino)? | | |
| Overall, how effective was the performance of the ESI Project Manager (Jim Gienger)? | | |
| How well did the Project Team understand the expectations of their specific roles and responsibilities? | | |
| How well were your expectations met regarding the extent of your involvement in the project (effort time commitments etc.)? | | |
| How effective was each Project Team member in fulfilling his/her role? | | |
| Were there incidents where a team or an individual <ul style="list-style-type: none"> • Delegated effectively • Served as role model/resource/leader • Identified and/or accomplished additional goals in addition to relevant goals • Met unique challenges and/or accomplishments that occurred during the evaluation period • Achieved exceptional productivity through excellent organizational/time management skills | | |
| Were there incidents where a team or an individual <ul style="list-style-type: none"> • Was unable to carry out tasks competently and/or consistently • Completed tasks that needed to be corrected or redone • Demonstrated inflexible/unwilling/ unproductive/inefficient work style • Required ongoing/progressive discipline (Yes or No) • Did not attempt to achieve goals identified for the performance period • Did not prioritize workload/time • What were the costs/consequences of these incidents | | |
| GENERAL QUESTIONS | | |
| What were the most significant issues on this project? | | |
| What were the lessons learned on this project? | | |
| What on the project worked well and was effective in the delivery of the product? | | |
| Briefly describe problems with work quantity Identified | | |
| Briefly describe problems with work quality identified | | |
| What other information would you like to provide to us about this project? | | |

Thank you for your cooperation in completing this survey. We value your comments and will ensure they are taken into account in the Project Assessment review and Report.

APPENDIX 2 - TFFR PENSION SYSTEM UPGRADE PROJECT RESULTS AND CONCLUSIONS SUMMARY

CATEGORIES: Categories of the report correspond to the categories in the Post-Project Survey. The rating scale used by respondents was: (1=Not at All, or Poor, 2=Adequate, or Satisfactory, 3=To a great extent, or Excellent)

NOTE: The Overall Survey Rating provided in each section of this report was calculated by summing the scores from all respondents for all questions in that section and dividing by the number of responses for the section to produce an average to one decimal. The results show that the overall scores ranged from 2.0 to 2.8 (Satisfactory to Excellent).

A. PRODUCT EFFECTIVENESS - Overall Survey Rating – 2.6

This section provides a summary on how effectively the product and services or service met the needs of NDRIIO.

The goal of the mainframe replacement project was to update technology, improve service to members and employers, increase data reliability, provide tools to increase staff productivity, and enhance system integration capabilities.

Implementation of CPAS v5 product met these goals and the NDRIIO staff concluded that the CPAS v5 product is very functional, and meets the NDRIIO administration needs, while at the same time noting that there are a few remaining post implementation activities such as moving online web services to production and the completion of the Filenet interface.

The implementation plan was considered to be relatively smooth as the deliveries were provided in increments whereby NDRIIO tested many aspects of the plan set-up prior to final implementation. NDRIIO recommends this approach.

The Project Charter documented that the North Dakota Retirement and Investment Office (NDRIIO) was using a custom-built, mainframe software system to help automate their pension administration services. This system was originally designed and built almost 20 years ago using technologies and techniques that, although still supported, were no longer commonly used in modern computer systems. Over the two years preceding this project, NDRIIO experienced a growing number of problems and difficulties (needs) with the continued use of this system. NDRIIO addressed these needs by implementing the CPAS v5 Software configured to meet NDRIIO requirements for the pension administration of the TFFR as outlined in the specification documents.

These needs were translated into the project objectives (success measures) and are provided below with an assessment of the project outcome:

1. High cost for software updates
 - Experience with the software design at this point in time indicates that the CPAS system may provide NDRIIO with limited cost savings over the long term. Comparison of future IT costs with previous IT costs will be part of each biennial budget process. Savings are dependent on future ITD storage costs, and future enhancements required by NDRIIO (for example, legislative benefit changes). Enhancements are accomplished with standard CPAS Tools and do not require changes to the underlying code, so NDRIIO anticipates future changes may be less costly than with the mainframe system.
 - CPAS Systems Inc. has established processes with the ISO 9001-2000 registration framework for updates and migration to new versions of the software.
2. Slow response time for software updates (several weeks to months to get the changes made)
 - The CPAS CQ system has proven to be an efficient means to handle client needs and judged to be very effective in reporting errors and requests for future enhancements.
 - The short turnaround time to correct errors or configure enhancements indicates that future changes to the system should be much faster than the NDRIIO experience with the mainframe. This was reflected during the project in the flexibility in configuring and changing rules as the system underwent iterative development.

- Weekly CQ reports will be provided by CPAS showing the status of each CQ. Monthly reports will be provided showing detail information regarding each CQ including dates of activity, hours used, and resources assigned.
- 3. Poor reporting and access to data (requiring duplicate entry into spreadsheets or creation of many one-time reports)
 - CPAS automated the employer reporting/corrections and payment reversals to track in the accounting system improving access to data. To date, the use of Crystal reports to report data has been acceptable but more experience with complex reports will be a challenge.
- 4. Need for software to be table-driven to address most frequent changes (e.g. rates)
 - The CPAS v5 system employs Oracle RDBMS that has proven to be a very effective database management system.
 - Functionality - The ability to configure the CPAS system combined with the extra effort of the CPAS team to listen to the NDRIO needs and provide a workable solution was very effective.
 - Conversion – Although it took longer than expected, the final outcome after much data review and cleansing is a more trusted database.
- 5. Need to automate employer reporting (now handled with spreadsheets and manual processes)
 - The CPAS v5 system has exceeded NDRIO expectations. Although there are still a few bugs to work out (not affecting production), the changes NDRIO has seen in this area are rated as excellent. NDRIO has been able to eliminate numerous time consuming Excel spreadsheets and posted data accuracy has improved. Having all prior year corrections handled through employer reporting adjustments is proving to be very efficient.
- 6. Need to web-enable services and personalize information for members and employers
 - The basic member web services have been successfully developed and integrated with the North Dakota single sign on requirements. When further services are ready, the web services will be moved from test to production. Initial testing of member information indicates that the web services will be easy to use and provide relevant information to members and employers.
- 7. Need to resolve a number of manual processes to handle exception cases
 - CPAS v5 has been configured to handle dual members, QDRO, and return to teaching. Functionality is approximately 75% which is an improvement over the mainframe where it was completely manual. These processes account for a very small number of accounts. NDRIO and CPAS will continue evaluating the potential value of further automating of these exception cases.
- 8. System restores (be able to add in transactions from restore point to present)
 - The system has been tested to ensure that restoring the database is effective.
- 9. Integration with document and report management systems (Visual Info and OnDemand)
 - After the RFP was issued, support for the Visual Info product was dropped. All images were transferred to FileNet and the integration provided by CPAS and ITD for the FileNet image system is meeting NDRIO needs.
- 10. Member correspondence generation from system
 - The ability to automatically generate form letters and retirement forms has been effectively accomplished in the CPAS v5 implementation. Welcome letters, retirement letters, refund letters, and retirement enrollment forms are produced using the CPAS system. NDRIO plans to automate additional forms and letters in the future.
- 11. Workflow associated with related documents.
 - Workflow has been improved using FileNet in conjunction with CPAS v5. The CPAS v5 application included a Communications Center; however, NDRIO decided to use the Navigator, Task Manager, and Treeview functionality for workflow. NDRIO may decide to employ the Communications Center in the future.

B. COST SCOPE SCHEDULE QUALITY (CSSQ) MANAGEMENT – Overall Survey Rating: 2.8

CSSQ Management was judged overall very effective during the course of the project.

There were only 15 Change Requests (CR) during the project. Four CRs approved changes in the Project Team for the PM, Lead Programmer, and adding 2 programmers to the team. One CR corrected minor numerical errors in the original SOW. Eight CRs addressed changes in the Project Plan schedule due to various unforeseen circumstances. Two CRs assigned additional Report Development work to CPAS.

Cost. The project was managed within the original budget baseline. There was some reallocation within the budget; however, the project was realized under budget.

Schedule. The original Project Plan forecast a production date in July 2005. After project start, the project schedule was redefined to consist of two phases. Phase 1 included the implementation of the core system and production cutover to CPAS v5. Phase 2 tasks included Seminar Tracking, Web Services, and some report development. The final production date for Phase 1 was in September 2005. Phase 2 activities were completed in January 2006. The slippage in the live date was fully covered in Change Requests and was driven by several factors documented in the CRs, such as the workload implementing FileNet concurrently with the CPAS v5 implementation, delays in report development, delay in data extract and conversion, and an extension of the UAT period.

Scope. In terms of scope control, there were times throughout the project when NDRIO questioned whether certain elements were in or out-of-scope; however, as each issue or change was identified, documented, and assessed, the team reached a mutually satisfying agreement. NDRIO felt that the issue management process was very good and the willingness to compromise was paramount.

The change order process required an analysis and mutual agreement of changes to scope, cost and schedule. The team did a good job keeping the project in scope and ensuring quality work.

Quality. Quality management standards were maintained by the diligent use of the CPAS CQ tracking system, an effective UAT plan and ongoing unit and integration testing throughout the project. Due to the high confidence in the quality of the process and product, the project team decided no parallel testing was needed. Cutover to the CPAS v5 system went smoothly with little or no impact to members, employers, or NDRIO staff.

C. COMMUNICATIONS MANAGEMENT – Overall Survey Rating: 2.6

Overall communications between CPAS, NDRIO, and ITD were rated as excellent. There were many opportunities to exchange information, respond to questions, etc. The kickoff meetings, weekly CQ and project status meetings, Steering Committee meetings, and many meetings and work sessions contributed to a strong working relationship between the project team members, ensured that issues were identified and resolved in a timely manner.

The weekly status reports were very useful to monitor the project tasks, milestones and deliverables.

Comments:

- The TFFR Board felt very informed about the status of the project, and supported project decisions every step of the way.
- ITD support and involvement in the project was strong and their early involvement was a key success factor.
- CPAS company/management support was evident and appreciated.
- In hindsight NDRIO felt that monthly steering committee meetings were needed at the beginning and end stages of the project, and quarterly meetings would have been adequate during the middle stages. In the early stages of the project, the frequent meetings were beneficial in getting ITD management support and communicating issues on a very timely basis. Near the end of the project, perhaps more frequent meetings would have also been beneficial.
- CPAS and NDRIO project managers did an excellent job keeping everyone informed about project status and issues and keeping the team focused and on track. NDRIO commented that in retrospect it would have been advantageous to have the MSI PM on site more frequently.

- The Microsoft Project Plan was useful at the outset of the project to establish the NDRIO implementation baseline and was updated to Version 20 of the plan. As the project progressed the Microsoft project plan was not as effective as a communications vehicle and the weekly status report was used as the main tracking and planning vehicle.
- Communication on data conversion, although tracked at the weekly status meetings, was at times a problem as there were different and changing expectations in the amount of effort data conversion was going to take. The volatility in these expectations may have resulted in an overly optimistic assessment of data conversion completeness.
- The bits of humor in the status reports also helped on some of the very, very long days.

D. ACCEPTANCE MANAGEMENT – Overall Survey Rating: 2.3

Overall acceptance management was satisfactory and could be improved for future projects. Acceptance of deliverables should involve testing, but in a system where deliverables are staged and provided before final data conversion, acceptance was assessed as being generally in conformance with the specifications with full acceptance after UAT.

Comments:

- NDRIO, having never been involved in a software implementation project before, struggled with the acceptance management process. This could have been more fully explained and discussed at project start up. Acceptance criteria were provided in the Project Charter but were directed more towards UAT rather than routine acceptance of periodic deliverables before UAT.
- NDRIO sometimes found it difficult to actually approve deliverables as acceptable. Although this was not much of a problem in the early and middle phases, as there was sufficient time to work through the issues, toward the end of the project with tight timelines, there was more pressure to accept a deliverable to meet payment points.
- Fortunately, both parties worked hard throughout the project to make sure that the deliverables were ultimately acceptable to NDRIO. NDRIO trusted that CPAS would deliver what they promised, and CPAS always honored that promise. "We knew we were dealing with honest, intelligent, hardworking people who wanted a successful project just as much as we did".
- In a couple of cases, CPAS programmed functionality, delivered it for testing, but did not review how the functionality should work. However, once NDRIO contacted CPAS they were always ready and willing to assist.
- In hindsight, the team could have done a better job of drafting specifications. This may have eliminated the couple of instances that NDRIO assumed CPAS would just understand something from a functionality and programming standpoint. Through give and take these instances were worked through and did not seem to hinder the project.

E. ISSUES MANAGEMENT – Overall Survey Rating: 2.5

Effective issues management was a project strength. This was achieved through the establishment of the issues management process in the Project Charter, effective use of the CPAS CQ tracking system and weekly status meetings to discuss and resolve issues so the project would not be delayed. Most issues were resolved before change control was needed.

Comments:

- Most issues were quickly identified, managed, and resolved and did not impact major activities or deliverables.
- The more significant issues were addressed in a timely manner, and resolved as efficiently as possible. NDRIO noted that all parties worked hard to anticipate and maintain a focus on potential problems and although some issues did remain on the status report for several weeks until resolved, all issues reached a satisfactory conclusion.

- Escalation. In most cases, NDRIO and CPAS team members worked together to find agreeable solutions and so few issues needed escalation. Generally, once the CPAS PM became involved, issues were resolved quickly.
- Impact on schedule. Some issues that impacted schedule were documented and schedule changes were made through a mutually agreed Change Request acknowledging the factors that impacted the schedule. There were a small number of issues impacting the total cost of the CPAS part of the project (mainly report development), but not overall budget.
- NDRIO noted that CPAS was very mindful of both schedule and budget issues. Budget – total budget for the project was not impacted, however, NDRIO did reassign some dollars for CPAS to complete a number of reports since more NDRIO time was needed for conversion. NDRIO commented that this demonstrated CPAS's commitment and depth of staff to help out where needed.
- Schedule – the go live date (Oct 1) was a couple of months later than originally planned but that turned out to be a good thing. Following an analysis entitled "Project Plan for Work Volume" it was determined that the original go live date of July 1 2005 was overly optimistic since it would occur at the NDRIO fiscal year end (very busy and final contribution data is not due until July 15 and balanced until August.) This delay also caused the Phase 2 items to be delayed thus causing the overall schedule and final sign off to go over schedule.

CQ (CPAS Quality) Effectiveness. NDRIO found the CQ tool very useful and noted that they could not imagine keeping track of project issues any other way. While it took a few users a while to start using it, now the users say that they don't know what they would have done without it.

F. TRAINING & TESTING

This section is divided into two sections: Training and Documentation and User Acceptance Testing.

Training and Documentation: Overall Survey Rating: 2.0

Training consisted of progressive sessions to train the NDRIO staff first on the template, next in preparation for UAT and third for production. Training and documentation was more effective in the early stages of the project before the product was configured to NDRIO requirements. The trainer was very familiar with the template product but due to limited preparation time for subsequent training, some elements of the configured system were not covered in sufficient detail. Although this was compensated for by having CPAS project team members assisting the training, this was considered a weak area of the project. Overall training was considered to be satisfactory.

Comments:

- Initial documentation and training was adequate, but once the base product was customized, the materials and training lagged behind and had to catch up at the end of the project. In some cases this certainly was understandable since we were changing and testing functionality just prior to testing; however, this was not always the case.
- The CPAS Trainer did not provide the depth of training required by NDRIO. To compensate for this, the NDRIO supervisor who was working closely with CPAS project team was able to conduct some training to prepare end users for UAT, and work with CPAS team to make sure the documentation included the customized version of CPAS.
- It helped to have the CPAS Lead Analyst, and programmers participate in the training sessions to assist as needed.
- The final documentation from CPAS was delayed but was significantly enhanced to meet NDRIO requirements.

User Acceptance Testing: Overall Survey Rating: 2.5

The UAT phase was very well planned and executed. This was due to a high confidence going into UAT through progressive testing as releases were delivered, data conversion that was very close to the final data conversion so calculations could be compared to the mainframe test scenarios, and a comprehensive UAT

spreadsheet that was updated with each test cycle. Any errors found were corrected as a high priority and retested during the next UAT cycle.

Comments:

- UAT was comprehensive. The NDRIO team was very thorough during UAT and provided the confidence that the system was ready for production. The NDRIO Pension Supervisor was credited with doing an excellent job of anticipating all possible scenarios for testing and communicated the process very well.
- NDRIO felt that the CPAS team did a very good job fixing problems during UAT. The onsite work sessions were extremely valuable. It was recommended that more on site sessions should be incorporated in future project plans, as together, the team “moved mountains” during the onsite workweeks.
- Some problems that came up when release updates were tested should have been caught through testing prior to delivery. This would shorten the time to get a change into production. When brought to the attention of CPAS project manager it did improve.

G. PROJECT IMPLEMENTATION & TRANSITION TO SUPPORT

This section was divided into two parts: Implementation and Transition. Overall implementation was rated as excellent and transition to support as satisfactory. The success of the implementation was attributed to good planning at the outset, diligent weekly reviews of progress, a product that is flexible and highly configurable and outstanding cooperation among all implementation teams – CPAS, NDRIO and ITD.

Project Implementation – Overall Survey Rating: 2.8

The project implementation was highly effective due to several factors: a very good division and definition of roles and responsibilities; effective project management; a flexible product that could be quickly changed to correct errors or plan rules; and, a highly motivated team willing to compromise to keep the project on schedule and within scope. In general, CPAS drafted the project documentation, performed rules and administration set-up, data loading, training and report development. NDRIO performed testing, set up of some aspects of the workflow system and the imaging system, contributed heavily to specification development and assisted in data cleansing, data conversion and reconciliation. ITD worked on the installation of the software, FileNet interface, data extract programs and assistance with web services.

Although the overall rating is high, the survey did provide some insight into issues that were observed during implementation with the note that all issues were effectively resolved.

Requirements

- There was some frustration at NDRIO during requirements gathering and writing specifications. NDRIO was requested to write up current processes, but that did not seem to be effective as this led to some misunderstandings on both sides. This process could have been improved by having CPAS facilitate early walkthroughs of the specifications onsite with NDRIO.
- Although the functionality was covered in the specification document (no major processes overlooked) more detail was needed. CPAS, with NDRIO input, should have flow charted the core processes and added in more functional and procedural detail.
- CPAS’ lack of experience with a teacher system should not have been overlooked and both parties should have discussed more thoroughly the issues before writing the specs. This discussion might have assisted in detailing several areas that caused frustration during conversion, configuration, and implementation.
- NDRIO assumed that details not included in the specifications would be filled in during the implementation process. There was a line between where everything should be written and where CPAS should be trusted to handle the details that NDRIO was never able to clearly define.

Configuration

- Recommend the segmented approach used to configure and test the rules set up. This approach found other issues early on and that allowed NDRIO to address them in a timely fashion. It also

provided the opportunity to be involved with early testing, which helped build and complete a very comprehensive UAT plan.

Data Conversion

- NDRIO/ITD had some trouble with mapping errors in coding the mainframe data to CPAS. After a resource change at ITD, many problems on the NDRIO side were eliminated.
- CPAS had some trouble in providing a resource with the needed skills to lead the conversion effort. CPAS provided additional resources and added additional dry runs to the project plan to successfully achieve the goal.
- Many people worked together to overcome the data conversion challenges, and got the job done.
- Experience from other projects indicates that data conversion will cause the most headaches and it did. 'No matter how good you think your data is you will always be surprised at what you find'.
- The couple of areas that might have helped would have been a better explanation from CPAS as to what "date driven" really meant. It would have been advantageous if CPAS outlined prior to conversion all the dates used by CPAS for employment, financials, and calculations. Then NDRIO might have made an earlier decision to dump old employment history. Also, NDRIO might have understood the problem areas and could have begun data cleansing earlier.
- The NDRIO team did not know enough about CPAS data structures and processes to adequately judge whether conversion decisions would result in CPAS tables that could accurately reflect TFFR member data from the legacy system. More training or explanation of the data structures or onsite involvement by a CPAS resource may have improved the NDRIO understanding of the data conversion requirements.

Transition to Support Services – Overall Survey Rating: 2.0

- Transition is in process at this time, but NDRIO noticed a slowdown in activity. It appears that the team members are all very capable, but maybe not as driven to get the issues resolved as the implementation team, or do not have as much time available to work on the outstanding issues (other clients, priorities, etc.). Note that a recent site visit and a scheduled site visit by the CPAS Lead programmer have mitigated this observation.
- Since the current lead programmer is assigned to both implementation and support team there should be no quality difference. NDRIO would like to see him remain on the team for a long time as there could be problems or delays if a programmer change took place until remaining issues are resolved.
- The transition plan appears to work, as long as all support team members can work together.

H. PERFORMANCE OF PROJECT TEAM – Overall Survey Rating: 2.5

Overall the project team was very effective, worked well together and demonstrated a high motivation to succeed.

CPAS Project Management

- The survey respondents accorded high marks to the CPAS PM for leading CPAS and NDRIO through the implementation project. His leadership skills, communication skills (verbal and written), and overall PM ability were rated as outstanding, and much of the project success was attributed to him.
- Quote, "He is a master at pushing a project and people along to a successful outcome. Enjoyed his sense of humor also. You knew from day one that Bryan was well respected by the CPAS team and would get things done. Knowing he was at the helm gave me a comfort level and a few less sleepless nights."

NDRIO Project Management

- NDRIO commented that the NDRIO PM skills were very good, however because she was offsite during much of the implementation she was not able to manage the project as effectively as they had expected.

- There seemed to be a duplication of time and effort (MSI and ESI) which at times resulted in confusion in day-to-day management of project and communication with CPAS PM and RIO staff.
- The NDRIO PM assisted NDRIO a great deal on the UAT plan and did a good job of documenting the project in Steering Committee and Quarterly reports.
- NDRIO was assisted in Bismarck by a project coordinator (ESI) who was considered to be an extremely valuable asset to NDRIO in the CPAS implementation project and Filenet image conversion project. Since NDRIO had an added challenge of the new software being housed at ITD and having to meet all ITD standards, his experience with ITD was certainly a great help to NDRIO and this project. His assistance with NDRIO's image conversion in the middle of the project was also helpful.

Project team understanding of the expectations of their specific roles and responsibilities

- Overall, NDRIO felt that all the roles and responsibilities were covered.
- Data conversion created a great deal of data cleanup work that was not anticipated at project initiation.
- Testing was intense as expected and gave the NDRIO team a better understanding of the software.
- Creating the specifications was a very time consuming task.
- A small agency has a very difficult time dedicating staff to a project. NDRIO considered hiring temporary help during the project but decided that the training and supervision of temporary help would be a more of a burden than a benefit. NDRIO feels the correct decision was made.

Project Team individual effectiveness in his/her role

- Overall the CPAS and NDRIO team members were rated as extremely effective – a very high caliber group.
- The depth and dedication of the team overcame any individual obstacles and the team gained respect for their knowledge and expertise.
- The team members were very professional in their approach to the project and scored high on the "likeability" scale. An important aspect of a project is the human interaction. Quote, "It's easier to work with people day after day (and night after night) if you like and respect them. I enjoyed working with the team."
- There were many incidents where individuals led and delegated effectively, identified and accomplished additional goals, met unique challenges and achieved excellent project productivity through excellent organizational skills.
- The CPAS team and the RIO team pulled together and met some difficult challenges.
- Members demonstrated a "can do" attitude and a commitment to working together to tackle complex configuration
- There was a high level in confidence in capabilities of the CPAS team (analysts and programmers) in approaching problems and complex requirements in innovative and effective ways, evidenced by work on the benefit estimator, and other components early in the project.
- At NDRIO, the team was very well led and depended heavily on the excellent subject matter knowledge of the supervisors and staff.
- The demands on the NDRIO technical team were extensive considering the requirements for data conversion, image conversion, reports, managing the updates etc.
- At ITD the data conversion extract programming and the DBA services were appreciated and considered to be effective, although there was an early problem in data conversion that was quickly resolved by the assignment of a senior resource to the task. This flexibility at ITD was a key factor in accomplishing data extract tasks.
- There were very few incidents where a team or an individual; was unable to carry out tasks competently or consistently. Some incidents were reported in the survey; however, no matter what the issue, the whole team ultimately pulled together and accomplished the work that needed to be done.
- CPAS had some problems with the programmer assigned to data conversion, and underestimated time required for the 1099 reports.

- NDRIO assignment of data conversion tasks to one resource only resulted in some schedule slippage.

I. GENERAL QUESTIONS

Issues reported in the Survey

- Performance Bond. It took about one month to finalize the terms of the Performance Bond. In hindsight there were sufficient safeguards in the project to question the requirement for a performance bond. There were signoffs for all major deliverables, acceptance testing, and a holdback based on successful live production. In addition the RFP process and the selection process were very thorough, significantly reducing the risk of failure.
- Specification development and signoff. Generally felt more detail was required.
- CPAS/ITD agreement on security protocols. This is related to the installation in a shared server environment.
- Data cleansing and conversion. The effort was greater than anticipated.
- Image conversion. The impact on the NDRIO Staff workload of this concurrent project was an issue.
- Reports. Due to the data conversion effort and the FileNet image conversion project, the original plan to have NDRIO staff develop reports would not work and the work was shifted to CPAS staff who completed the reports on time.
- System performance. NDRIO understood from our early meetings that the CPAS program would have satisfactory response time with a T1 line between the server and client machines. This turned out to be wrong; if the line from North Dakota ITD to NDRIO had not been upgraded to fiber, we would have had to make a decision between installing a server at NDRIO (requiring an exception request to ITD) and ending the project.
- Web services. The integration of CPAS Online and the ND State single sign in requirement required more time to complete this part of the project.
- Training should have gone into greater depth after the initial template training.
- Suitability of CPAS program for use in shared server environment. The issue was recognized and ITD agreed to install CPAS v5 on a separate instance.
- Time –This was a huge amount of work to accomplish in a relatively small timeframe for a small staff.
- Maintaining the same level of service during project implementation. NDRIO considered hiring additional staff but the training and supervision aspects outweighed the benefits in a short timeframe situation. NDRIO did reduce some services such as some outreach programs during the implementation.

Lessons learned as reported in the Survey

- NDRIO Project Manager (MSI) should have been onsite on a more regular basis.
- A better defined process for gathering requirements, defining/accepting deliverables, and training/documentation would be helpful.
- Specifications should be written with a programmer in mind and should flowchart in detail the core functions.
- With CPAS onsite significant progress was made on the task at hand, be it conversion or CQ resolution. More onsite visits might have kept us closer to schedule.
- Training materials should have been created jointly between CPAS and NDRIO. The actual training sessions might have been more effective if done in part by NDRIO staff familiar with the customized pieces and internal procedures. The first session or two were useful, but as the project moved along and more NDRIO customizations were incorporated, the training material became less effective.
- Recognize the importance of data conversion and the decisions that must be made on data cleansing and how much data should be converted (or required) for a new system.
- Early involvement of all affected staff in design and specification processes would be beneficial.

Survey comments on what worked well to deliver an effective project

- Flexible project schedule, change request process, communications, and issues management (CQ).

- It was the people involved in the project that utilized the appropriate tools, processes, and resources and worked hard together to ensure project success.
- Experienced and dedicated staff at NDRIO and CPAS.
- Onsite visits by CPAS and NDRIO (Toronto and Bismarck). Weekly status meetings.
- The software itself is very easy to use and was customized to meet almost all of the NDRIO needs. This allowed the end users to find an immediate comfort level with the new system and change management issues were almost nonexistent. The improvements in functionality certainly outweighed any negative aspects of converting from the mainframe.
- The CPAS CQ system has proven to be an excellent tool for reporting problems and tracking them to resolution.
- Ongoing testing rules and configuration during the project.
- Data Reconciliation was conducted before accepting the data conversion for production

Problems with work Quality

- None were reported. NDRIO experience has been that the CPAS team is more than willing to devote time and energy needed to solve problems and create solutions.